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2 mg GAE/100g f.w.) and of
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TOTAL ANTIOXIDANT CAPACITY OF CERTAIN MEDICINAL PLANTS
ASSESED WITH FRAP METHOD AND CYCLIC VOLTAMMETRY

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Antioxidants are substances that protect cells from damage caused by free radicals. Many of the biological properties, including antimutagenic, anticarcinogenic and antiaging, among others, may originate from antioxidant property of many substances. Plant phenolic compounds (e.g. phenolic acids, flavonoids, quinones, coumarins, lignans, stilbenes, and tannins), nitrogen compounds (alkaloids, amines), carotenoids and vitamins are the most important plant substances possessing antioxidant activity.

The aim of this study was to analyze the total antioxidant levels of medicinal plants collected in the region of Malesevo Mountain, by two different methods and compare the results.

Infusions used as samples were prepared from: *Origanum vulgare* L. (mountain tea), *Mellisa officinalis* L. (lemon balm), *Hypericum perforatum* L. (St. John's wort), *Thymus serpyllum* L. (wild thyme) and *Mentha piperita* L. (mint tea).

The total antioxidant capacity (TAC) of herb infusions was evaluated using the FRAP method (Ferric reducing/antioxidant power; photometric method) developed by Benzie and Strain.

The total antioxidant capacity of these medicinal plants has also been studied in an ethanol/water phase by means of cyclic voltammetry (electrochemical method), by measuring the rate of the homogeneous redox reaction with ABTS (2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid)).

The results from the FRAP method showed that mountain tea has the highest total antioxidant capacity 27.45. Next in the line are: lemon balm, with TAC value of 19.54, St. John's wort, 12.64, wild thyme, 9.45 and mint tea, 8.14. The results are expressed as mmol Fe²⁺ L⁻¹.

The results obtained with the voltammetric technique confirm the same trend of descending of the anodic current as the TAC values in analyzed infusions.

As a conclusion we can say that total antioxidant levels in infusions prepared from medicinal plants originated from our country exhibit strong antioxidant potential, and this fact justifies their use as potent natural antioxidant agents.

Both photometric and electrochemical methods can be used for assessment of total antioxidant levels in medicinal plants infusions.

Key words: antioxidant capacity, plants, FRAP, cyclic voltammetry